

APPARATUS AND METHOD FOR RESTORING DC SPECTRUM FOR  
ANALOG TELEVISION RECEPTION USING DIRECT CONVERSION  
TUNERS

ABSTRACT OF THE DISCLOSURE

A DC compensation circuit restores the frequency spectrum of an input signal at DC (or 0 Hz) by removing or reducing DC offset, 1/f noise, or any other unwanted noise at or near 0 Hz. The DC compensation is performed using direct coupling, as opposed to AC coupling, so that no useful signal information in the active period of the input signal is lost at DC. The DC compensation circuit samples the input signal during an inactive period of the input signal. After which, the unwanted DC noise is determined from the sampled signal and stored until an active period of the input signal. For example, the sampled signal can be filtered using a passband around DC so as to isolate the signal energy at DC during the inactive period. Since there is no useful signal information present during the inactive period, any signal energy at the output of the filter is necessarily unwanted DC noise. In a feed-forward approach, the unwanted DC noise is then subtracted from the input signal during the active period of the input signal to compensate or cancel the unwanted DC noise. Alternatively, the unwanted DC noise could be sampled and determined during the inactive period and then fed *back* (after filtering) in order to be subtracted during the active period of the input signal.

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